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UNITED STATES DEPARTMENT OF AGRICULTURE

WEATHER BUREAU

WASHINGTON, D. C.

MONTHLY WEATHER REVIEW

Editor, W. J. HUMPHREYS

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OCTOBER, 1932

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BISHOP'S RING SEEN IN AUSTRALIA FOLLOWING THE EXPLOSION OF QUIZAPÚ, CHILE, APRIL 10, 1932

Mr. Albert G. Ingalls, associate editor of the Scientific American, kindly sent to me the following letter by Mr. Frazer-Paterson, of Broken Hill, Australia:

I beg to advise that the Bishop's ring was visible in the western sky at 5 p. m. on Saturday the 23d July, 1932. This date is about 10½ weeks after the eruption in the Andes. The color of the ring was sepia.

Bishop's ring, so named after the Rev. Sereno Bishop, of Honolulu, Hawaii, who was the first to describe it as seen after the explosion of Krakatoa in 1883, is a broad, diffuse corona of about 22° outer radius. It is produced by diffraction of the sun's light by fine volcanic dust in

the stratosphere and is analogous to the small rings in thin clouds about the sun and moon.

This appearance in Australia of Bishop's ring is only one of several phenomena of the same origin reported from many parts of the Southern Hemisphere since the explosion of Quizapú, latitude 35° 38' S., the evening of April 10, 1932. Of course the intensity of the sunshine at the surface of the earth has been reduced over much of that hemisphere, and it will be interesting to know the consequent effect on the average temperature. There is no evidence yet that this dust has spread to the Northern Hemisphere.—EDITOR.

WEATHER CHARTS OF THE NORTHERN HEMISPHERE

It is a matter of great interest to meteorologists and climatologists that the Deutsche Seewarte of Hamburg has undertaken to produce, on behalf of the International Meteorological Organization, daily synoptic weather charts based on as full information as can be obtained. These charts are not prepared in time for current forecasts, but are for that detailed study out of which more

may be learned of the causes of spells of abnormal weather, and thus greater accuracy, and especially greater range, in weather forecasting be secured.

The Deutsche Seewarte, which needs and merits support in this undertaking, will gladly furnish further information and a sample map to anyone especially interested in this work.—EDITOR.

TROPICAL DISTURBANCE OF OCTOBER 7 TO 15, 1932

By R. H. WEIGHTMAN

[Weather Bureau, Washington, D. C.]

A disturbed condition made its appearance over the western Caribbean on the 7th between Swan Island and Cape Gracias and during the next two days moved slightly north of west, with slowly decreasing pressure at the center. It was central on the evening of the 9th a short distance east of Belize, with lowest pressure 29.56 inches. It continued to move slowly westward until the 11th, when it was central near Carmen (Mexico). (See Track No. 10 on Chart VIII at end of this REVIEW.) It then turned more to the northwestward, and on the 14th, 8 a. m., it was located about 200 miles southeast of Brownsville. Storm warnings were hoisted between Brownsville and Corpus Christi following the receipt of 4 p. m. special observations from these stations. Brownsville reported winds shifting from the north to northeast

and a fall in barometric pressure of 0.14 inch in three hours. By 8 p. m. of the 14th, however, the winds at Brownsville had backed to northwest, which with other available information placed the center about 150 miles east by south of Brownsville. During the next 12 hours the disturbance advanced northeastward and on the morning of the 15th was located about 120 miles southeast of Galveston. At that time storm warnings were ordered between Galveston and New Orleans and a little later between New Orleans and Apalachicola. The disturbance moved inland across the Louisiana coast during the afternoon of the 15th. While attended by gales no winds of hurricane force were reported at any time during its history.

BIBLIOGRAPHY

C. FITZHUGH TALMAN, in charge of library

RECENT ADDITIONS

The following have been selected from among the titles of books recently received as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies:

- Baldit, Albert.
Orages, grêle et foudre dans la Haute-Loire. Le Puy-en-Velay. 1932. 224 p. illus. 25½ cm. (Pub. Soc. des études locales. No. 11.)
- Brooks, C. E. P.
Le climat du Sahara et de l'Arabie. Paris. 1932. 81 p. figs. 27 cm. (Soc. de géogr., Paris. Le Sahara, ouvr. pub. sous la direc. de Masauji Hachisuka.)
- Elliott, T. C.
Chinook wind. Salem. 1932. 7 p. 24 cm. (Repr.: Oregon hist. quart. v. 33, no. 3.)
- Ficker, H. v.
Über die Entstehung lokaler Wärmegewitter. 2. Mitteilung. Die Vorgänge in der freien Atmosphäre über Lindenbergl am 2. und 3. Juli 1914. Berlin. 1932. 54 p. figs. 25½ cm. (Sitzungsber. preuss. Akad. der Wissensch. Phys.-math. Kl. 1932. XVI.)
- Gray, R. Whytlaw, & Patterson, H. S.
Smoke, a study of aerial disperse systems. London. 1932. viii, 192 p. figs. pl. 22½ cm.
- Great Britain. Min. agr. & fish., & bd. of agric. for Scotland. Agric. met. scheme.
Bibliography of literature on agricultural meteorology. Sec. 1-4. (in 3 vols.) 1930. [Manifolded.]

- International geodetic and geophysical union. Association of meteorology.
Réunion de Lisbonne (Octobre 1933). Programme de discussion. Paris. 1932. 3 p. 27 cm.
- Jaumotte, J.
La compensation thermique des baromètres anéroïdes. Bruxelles. 1932. 26 p. figs. 25 cm. (Inst. roy. mét. de Belgique. Mém. v. 4.)
- Kinoshita, Masao, & Ishii, Chihiro.
Effect of humidity on supersonic velocity in air. p. 83-96. illus. 26½ cm. (Sci. papers Inst. phys. & chem. res., v. 19, Oct. 1, 1932.)
- Lucio, R.
Las perturbaciones de la atmósfera. Mexico. 1932. 109 p. 17 cm.
- Mémery, Henri.
Les époques de fréquence de la pluie, à Bordeaux, pendant 50 ans (1880 à 1929). Bordeaux. 1931. p. 125-128. 24 cm. (Assoc. franç. avance. sci. Extr. Comptes-rendus, Congrès d'Alger (Avril 1930).)
- L'Influence solaire et les progrès de la météorologie. Résultats de 50 années d'observations solaires et météorologiques comprenant les observations et les recherches effectuées à Talence, à partir de 1900. Talence. 1932. 23 p. figs. 24½ cm.
- Schmidt, Karl.
Die Abkühlungsgrösse in Karlsruhe. Karlsruhe. 1932. 32 p. illus. 28 cm. (Veröffent. Badischen Landeswetterwarte. Nr. 18.)
- Talman, Charles Fitzhugh.
Magic called mirage. v. p. illus. 30 cm. (Yachting. v. 51, no. 4, Apr., 1932.)

SOLAR RADIATIONS

SOLAR RADIATION MEASUREMENTS DURING OCTOBER, 1932

By IRVING F. HAND, Assistant in Solar Radiation Investigations

For a description of instruments employed and their exposures, the reader is referred to the January, 1932, REVIEW, page 26.

Table 1 shows that solar radiation intensities averaged slightly above normal values for October at all three stations at which normal incidence measurements are made.

Table 2 shows an excess in the total solar radiation received on a horizontal surface at Lincoln, Chicago, Fresno, Pittsburgh, and Miami, and a deficiency at all other pyrheliometric stations.

Table 3 shows low turbidity values for the month with the exception of October 3, which was an extremely hazy day.

Polarization measurements obtained on four days at Washington give a mean of 60 per cent, with a maximum of 64 per cent on the 29th. At Madison measurements obtained on four days give a mean of 58 per cent, with a maximum of 60 per cent on the 21st. These are average October values for Washington, but for Madison the values are considerably below the October normals.

TABLE 1.—Solar radiation intensities during October, 1932

[Gram-calories per minute per square centimeter of normal surface]

Washington, D. C.												
Date	Sun's zenith distance										Local mean solar time	
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°		
	75th mer. time	Air mass										
		A. M.					P. M.					
		e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0		5.0
Oct. 3.....	mm.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mm.	
Oct. 8.....	7.04	0.75	0.87	1.00	1.18	1.39					4.37	
Oct. 10.....	9.14				0.77						10.97	

*Extrapolated.

TABLE 1.—Solar radiation intensities during October, 1932—Contd.

Washington, D. C.—Continued

Date	Sun's zenith distance										Noon	
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°		
	75th mer. time	Air mass										Local mean solar time
		A. M.				P. M.						
		e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0		
	mm.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mm.	
Oct. 11.....	6.50				1.30						5.36	
Oct. 14.....	5.36			0.99	1.21	1.47	1.28				4.57	
Oct. 22.....	6.27	0.82	0.90	1.04	1.23	1.53					4.57	
Oct. 27.....	7.29	0.67	0.87	1.03	1.22	1.45					4.75	
Oct. 29.....	6.02				1.31						3.63	
Means.....		0.75	0.88	1.02	1.17	1.43 (1.28)						
Departures.....		±0.00	+0.04	+0.06	+0.05	+0.02	+0.16					

Madison, Wis.

Oct. 6.....	3.99			1.04	1.31						4.17	
Oct. 7.....	5.16			0.94	1.08						6.27	
Oct. 13.....	4.75						1.29				4.17	
Oct. 20.....	3.81						1.38				4.17	
Oct. 21.....	3.81		1.29		1.46		1.36				3.81	
Oct. 26.....	4.75			1.14	1.38		1.30				4.17	
Means.....			(1.12)	1.09	1.38		1.33					
Departures.....			+0.14	-0.03	+0.10		+0.14					

Lincoln, Nebr.

Oct. 1.....	9.47		0.91	1.17	1.22	1.36					10.59	
Oct. 11.....	4.57			0.75	1.18						3.99	
Oct. 12.....	6.02						1.27	1.11	0.97	0.81	6.27	
Oct. 13.....	6.27	0.76	0.91		1.10		1.31	1.04			7.57	
Oct. 17.....	6.27	0.86	1.22	1.32	1.43	1.55					8.18	
Oct. 18.....	10.59	0.84	0.93		1.03						10.97	
Oct. 19.....	4.37	0.84	0.98	1.05	1.40		1.40				3.45	
Oct. 20.....	3.45	1.09	1.31	1.38	1.46		1.40				3.45	
Means.....		0.88	1.04	1.13	1.26	1.46	1.34 (1.08)	(0.97)	(0.81)			
Departures.....		+0.02	+0.10	+0.03	-0.02	-0.02	+0.09	±0.00	+0.03	-0.03		

TABLE 2.—Average daily totals of solar radiation (direct+diffuse) received on a horizontal surface

Week beginning—	Gram calories per square centimeter												
	Washington	Madison	Lincoln	Chicago	New York	Fresno	Pittsburgh	Fairbanks	Twin Falls	La Jolla	Gainesville	Miami	New Orleans
1932	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.
Oct. 1	326	267	328	268	280	454	283	112	371	172	209	422	312
Oct. 8	363	194	322	180	312	420	237	95	311	196	290	365	370
Oct. 15	194	189	369	239	98	411	123	58	280	227	183	385	346
Oct. 22	225	139	198	156	154	400	230	43	276	285	185	416	354
Departures from weekly normals													
Oct. 1	-3	-2	+4	+45	+16	+56	+23	-----	-27	-130	-144	-21	-----
Oct. 8	+57	-48	+22	-16	+69	+32	+23	-----	-25	-80	-68	-38	-----
Oct. 15	-83	-34	+62	+58	-112	+36	-67	-----	-80	-30	-177	+2	-----
Oct. 22	-43	-63	-74	-6	-35	+54	+52	-----	-45	+18	-168	+59	-----
Accumulated departures on Oct. 28													
	+8,638	+961	-1,419	+16,865	+19,364	+9,356	+6,370	-----	-8,696	-2,028	-----	-3,369	-----

TABLE 3.—Solar radiation measurements, and determinations of atmospheric turbidity factor (β), Washington, D. C., October, 1932

Date and solar hour angle	Solar altitude, h.	Air mass, m.	I_0	I_1	I_2	β	Blue-ness of sky	Atmospheric dust particles per cubic centimeter	Notes: sky-light polarization, P.; clouds, etc.
Oct. 3			gr. cal.	gr. cal.	gr. cal.				
0:27 a	46-36	1.38	1.231	0.873	0.690	0.120	5	529	Hazy.
0:24 a	46-41	1.37	1.245	0.878	0.694	0.115			Cirri.
Oct. 8									
4:34 a	12-36	4.50	0.809	0.618	0.525	0.065	5	674	P=58.0.
4:30 a	13-21	4.26	0.837	0.621	0.528	0.065			
3:49 a	20-42	2.81	1.028	0.734	0.618	0.065			
3:46 a	21-04	2.76	1.030	0.740	0.622	0.070			
3:15 a	26-20	2.25	1.058	0.827	0.680	0.075			
3:12 a	26-52	2.21	1.127	0.830	0.663	0.075			
Oct. 11									
3:03 a	27-29	2.09	1.283	0.929	0.757	0.060		355	
3:00 a	27-53	2.07	1.289	0.931	0.740	0.060			
Oct. 14									
3:40 a	19-34	2.96	1.106	0.842	0.672	0.060		528	P=61.9.
3:42 a	20-17	2.86	1.100	0.846	0.675	0.065			
1:38 a	37-40	1.63	1.306	0.930	0.742	0.080	6		
1:35 a	37-56	1.62	1.284	0.934	0.743	0.085			
0:24 a	42-31	1.48	1.333	0.912	0.755	0.080			
0:21 a	42-36	1.48	1.332	0.916	0.737	0.080			
Oct. 22									
3:48 a	17-07	3.37	1.025	0.778	0.606	0.045		420	
3:45 a	17-37	3.28	1.034	0.781	0.609	0.045			
3:09 a	23-22	2.52	1.100	0.809	0.657	0.050			
2:35 a	28-16	2.11	1.248	0.872	0.703	0.050			
2:32 a	28-41	2.08	1.242	0.875	0.714	0.060			P=57.0.
0:16 a	39-49	1.56	1.369	0.882	0.720	0.045	5		
0:12 a	39-52	1.56	1.348	0.825	0.722	0.050			
Oct. 27									
0:25 a	37-54	1.63	1.254	0.905	0.703	0.080		420	
0:21 a	37-58	1.62	1.310	0.908	0.705	0.060			
Oct. 29									
2:17 a	28-40	2.08	1.246	0.885	0.728	0.065	4		P=64.3.
0:25 a	37-14	1.65	1.334	0.960	0.749	0.065			
0:12 p	37-31	1.64	1.311	0.963	0.746	0.075			
0:18 p	37-34	1.64	1.328	0.963	0.746	0.070			

POSITIONS AND AREAS OF SUN SPOTS

[Communicated by Capt. J. F. Hellweg, Superintendent United States Naval Observatory. Data furnished by Naval Observatory, in cooperation with Harvard, Yerkes, Perkins, and Mount Wilson observatories. The differences of longitude are measured from central meridian, positive west. The north latitudes are plus. Areas are corrected for foreshortening and are expressed in millionths of sun's visible hemisphere. The total area, including spots and groups, is given for each day in the last column.]

Date	Eastern standard civil time	Heliographic			Area		Total area for each day
		Diff. long.	Longi-tude	Lat-i-tude	Spot	Group	
1932							
Oct. 1 (Naval Observatory)	10 11				No spots		
Oct. 2 (Naval Observatory)	12 7				No spots		
Oct. 3 (Naval Observatory)	10 30	-41.0	132.5	+10.0	6		6
Oct. 4 (Mount Wilson)	13 21	-28.0	130.8	+9.0	1		1
Oct. 5 (Mount Wilson)	16 30	-13.0	130.8	+10.0		16	16
Oct. 6 (Mount Wilson)	11 30	-3.0	130.3	+10.0		17	17
Oct. 7 (Naval Observatory)	11 40	+12.0	132.1	+9.0		9	9

POSITIONS AND AREA OF SUN SPOTS—Continued

Date	Eastern standard civil time	Heliographic			Area		Total area for each day
		Diff. long.	Longi-tude	Lat-i-tude	Spot	Group	
1933							
Oct. 8 (Naval Observatory)	10 51				No spots		
Oct. 9 (Perkins Observatory)	13 5				No spots		
Oct. 10 (Naval Observatory)	11 47				No spots		
Oct. 11 (Naval Observatory)	11 12				No spots		
Oct. 12 (Naval Observatory)	14 27	-50.0	353.6	+10.0	6		6
Oct. 13 (Perkins Observatory)	15 15				No spots		
Oct. 14 (Naval Observatory)	11 41	-74.0	313.7	+8.0	15		15
Oct. 15 (Naval Observatory)	11 50	-61.0	313.5	+8.0	46		46
Oct. 16 (Perkins Observatory)	12 47				No spots		
Oct. 17 (Mount Wilson)	11 5	-33.0	315.5	+8.0	5		5
Oct. 18 (Mount Wilson)	12 50	-73.0	261.4	+10.0	206		213
Oct. 19 (Mount Wilson)	18 0	-56.0	262.3	+10.0		204	
Oct. 20 (Naval Observatory)	11 49	-49.0	259.6	+9.0		278	
Oct. 21 (Naval Observatory)	10 25	-36.0	290.1	+9.0		247	
Oct. 22 (Naval Observatory)	10 41	-22.0	290.8	+9.0		216	
Oct. 23 (Mount Wilson)	12 20	-13.0	255.7	+5.0	7		7
Oct. 24 (Perkins Observatory)	12 55	+5.0	260.1	+7.0		110	
Oct. 25 (Mount Wilson)	12 15	+19.0	261.3	+10.0		94	
Oct. 26 (Naval Observatory)	14 15	+32.0	260.1	+9.0		54	
Oct. 27 (Naval Observatory)	11 3	+43.0	259.6	+9.0	46		46
Oct. 28 (Naval Observatory)	11 42	+58.0	261.1	+9.0	46		46
Oct. 29 (Naval Observatory)	12 14	+71.0	260.6	+10.0	9		9
Oct. 30 (Naval Observatory)	12 55				No spots		
Oct. 31 (Naval Observatory)	11 48				No spots		
Mean daily area for October.							56

PROVISIONAL SUN-SPOT RELATIVE NUMBERS FOR OCTOBER, 1932

(Dependent alone on observations at Zurich and its station at Arosa)

[Data furnished through the courtesy of Prof. W. Brunner, University of Zurich, Switzerland]

October, 1932	Relative numbers	October, 1922	Relative numbers	October, 1932	Relative numbers
1	7	11	0	21	20
2	7	12	7	22	19
3	7	13	8	23	20
4	0	14	7	24	a 12
5	0	15	8	25	11
6	8	16	8	26	10
7	7	17	8	27	8
8	0	18	d 15	28	8
9	0	19	21	29	7
10	0	20	29	30	
				31	7

Mean: 30 days=9.0.

a=Passage of an average-sized group through the central meridian.
b=Passage of a large group or spot through the central meridian.
c=New formation of a center of activity: E, on the eastern part of the sun's disk; W, on the western part; M, in the central zone.
d=Entrance of a large or average-sized center of activity on the east limb.

[illegible]

TABLE 2.—Free-air resultant winds (meters per second) based on pilot balloon observations made near 7 a. m. (E. S. T.) during October, 1932—Continued

	Los Angeles, Calif. (217 meters)		Medford, Oreg. (410 meters)		Memphis, Tenn. (83 meters)		New Orleans, La. (25 meters)		Oakland, Calif. (8 meters)		Oklahoma, City, Okla. (402 meters)		Omaha, Nebr. (306 meters)		Phoenix, Ariz. (356 meters)		Salt Lake City, Utah (1,294 meters)		Sault Ste. Marie, Mich. (196 meters)		Seattle, Wash. (14 meters)		Washington, D. C. (10 meters)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
Surface.....	10	1.1	73	0.3	227	0.6	39	1.9	21	2.4	216	0.8	331	0.7	98	1.6	145	1.6	33	1.1	132	1.0	321	1.1
500.....	39	1.8	6	0.1	254	3.2	52	3.1	10	4.6	220	2.1	264	1.5	86	2.5	338	0.9	205	4.5	307	3.8	307	3.8
1,000.....	51	2.6	265	0.4	256	4.2	37	0.6	20	5.4	254	5.5	279	4.5	68	2.2	286	2.4	212	5.6	293	8.1	293	8.1
1,500.....	42	2.3	241	0.2	269	4.7	338	2.2	360	3.6	265	3.9	287	6.7	96	1.1	166	2.6	274	5.2	222	4.5	284	9.9
2,000.....	10	2.4	340	1.7	278	4.1	327	2.6	347	4.2	263	5.3	282	6.4	184	1.3	232	1.4	280	7.3	268	2.5	290	10.0
2,500.....	5	2.2	339	3.6	253	1.6	298	2.4	357	5.4	265	5.9	276	8.1	230	2.1	277	2.3	277	10.1	313	3.0	281	9.6
3,000.....	356	2.8	320	4.6	276	1.6	246	1.8	13	3.9	264	7.0	279	8.9	227	2.5	300	4.6	282	10.6	282	7.2	282	7.2
4,000.....			312	5.6							269	8.1	303	8.5	248	5.3	297	6.7						
5,000.....																	309	11.6						

RIVERS AND FLOODS

By RICHMOND T. ZOCH

[River and Flood Division, Montrose W. Hayes in charge]

In October there were floods in the Atlantic Coast and East Gulf States and in Texas; those in Texas, however, may be considered a continuation of the September overflows which were mentioned in the MONTHLY WEATHER REVIEW of that month.

The most noteworthy of all the floods of both September and October were those in the lower Rio Grande Valley. The following summary concerning them has been furnished by the official in charge of the Weather Bureau office in Brownsville, Tex.:

Torrential and probably unprecedented rains in Val Verde and adjacent counties in Texas during the last two days of August and the first day of September, and heavy to excessive rains over the Rio Grande and tributary watersheds below Del Rio later in September and early in October caused destructive floods in the lower reaches of the Pecos and Devils Rivers, and in the Rio Grande from Del Rio, Tex., to the Gulf of Mexico. The floods began early in September and lasted well into October in the lower Rio Grande Valley.

Record-breaking crest stages occurred in practically all of the reach from Del Rio to Brownsville.

On account of a rather long and severe dry spell in southern Texas, occurring somewhat earlier than usual, few fall crops had been planted. This minimized the flood damage, but still the loss of property was enormous in the aggregate, and is conservatively estimated to have been more than \$2,500,000 on the American side of the river. In addition, 10 or 12 lives were lost.

The value of all classes of property, including levees, that was saved by the timely warnings and accurate crest stage forecasts is even more difficult to estimate, but would undoubtedly approximate \$500,000. Besides, at least some lives were saved.

The losses due to suspension of business appear to have been offset in a large measure by the employment the flood created for many people who otherwise would have been unemployed.

Table of flood stages in October, 1932

[All dates in October unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE					
Chenango: Sherburne, N. Y.-----	<i>Feet</i> 8	6	7	<i>Feet</i> 8.7	6.
Susquehanna:					
Oneona, N. Y.-----	12	6	8	14.7	7.
Bainbridge, N. Y.-----	11	6	8	13.0	7.
James:					
Columbia, Va.-----	18	18	20	27.3	18.
Richmond, Va.-----	8	19	20	14.2	19.

Table of flood stages in October, 1932—Continued

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE—CON.					
Dan:	Feet			Feet	
Danville, Va.....	8	18	19	13.5	18.
Clarksville, Va.....	12	20	20	14.3	20.
Roanoke:					
Randolph, Va.....	18	18	20	28.9	19.
Weldon, N. C.....	31	19	22	42.7	21.
Scotland Neck, N. C.....	23	20	24	30.1	23.
Williamston, N. C.....	9	26	31	11.2	28.
Cape Fear: Elizabethtown, N. C.....	20	19	21	24.9	20.
Lynch: Effingham, S. C.....	14	23	25	15.3	24.
Pee Dee:					
Cheraw, S. C.....	27	18	22	33.7	20.
Mars Bluff Bridge, S. C.....	17	20	28	20.9	24.
Poston, S. C.....	18	25	30	20.3	27.
Saluda:					
Peizer, S. C.....	6	16	19	11.0	17.
Chappells, S. C.....	12	16	21	20.4	19.
Broad: Blairs, S. C.....	14	16	19	27.8	18.
Congaree: Columbia, S. C.....	15	17	19	21.7	19.
Catawba-Wateroe:					
Catawba, S. C.....	11	17	18	16.5	18.
Camden, S. C.....	23	19	20	25.5	20.
Santee:					
Rimini, S. C.....	12	18	27	18.9	22.
Ferguson, S. C.....	12	20	31	14.0	23-24.
Jamestown, S. C.....	12	26	31	16.1	30.
Savannah:					
Calhoun Falls, S. C.....	8	17	17	11.6	17.
Ellenton, S. C.....	14	18	24	22.7	21.
EAST GULF OF MEXICO DRAINAGE					
Black Warrior: Lock 10, Tuscaloosa, Ala.....	46	17	20	61.4	18.
Tombigbee:					
Aberdeen, Miss.....	34	18	22	37.4	19.
Columbus, Miss.....	25	20	21	25.5	20.
Lock 4, Demopolis, Ala.....	39	17	(1)	56.6	26.
Lock 3, Ala.....	33	17	(1)	56.8	27-28.
Lock 2, Ala.....	46	18	(1)	57.5	29.
Lock 1, Ala.....	31	18	(1)	38.6	Nov. 1.
Chickasawhay: Enterprise, Miss.....	20	18	19	20.9	18.
Pearl: Jackson, Miss.....	18	20	31	23.2	28.
MISSISSIPPI SYSTEM					
Ohio Basin					
Pigeon: Newport, Tenn.....	6	17	17	8.1	17.
French Broad: Asheville, N. C.....	4	17	19	6.5	18.
Elk: Fayetteville, Tenn.....	14	16	17	20.0	17.
WEST GULF OF MEXICO DRAINAGE					
West Fork: Fort Worth, Tex.....	20	Sept. 3	Sept. 5	30.7	Sept. 5.
Trinity:					
Dallas, Tex.....	28	Sept. 6	Sept. 8	34.0	Sept. 7.
Long Lake, Tex.....	40	Sept. 8	Sept. 9	41.3	Sept. 8.
Nueces:					
Cotulla, Tex.....	15	Sept. 4	Sept. 12	27.0	Sept. 7.
Three Rivers, Tex.....	35	Sept. 13	Sept. 16	39.6	Sept. 14.

Table of flood stages in October, 1932—Continued

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
WEST GULF OF MEXICO DRAINAGE—continued					
Pecos: Pecos, Tex.....	Feet 13	1	8	15.1	5.
Rio Grande:					
Del Rio, Tex.....	15	(Sept. 1 Sept. 7 Sept. 9 Sept. 30 6	Sept. 2 Sept. 7 Sept. 9 Sept. 30 6	34.5 18.8 16.3 17.2 17.2	Sept. 1. Sept. 7. Sept. 9. Sept. 30. 6.
Eagle Pass, Tex.....	16	(Sept. 1 Sept. 8 Sept. 30 6	Sept. 3 Sept. 10 Sept. 30 7	47.8 20.9 19.0 17.9	Sept. 2. Sept. 8. Sept. 30. 7.
Laredo, Tex.....	27	(Sept. 3 Sept. 3 Sept. 10	Sept. 4 Sept. 7 Sept. 12	52.0 34.8 23.4	Sept. 3. Sept. 5. Sept. 11.
Rio Grande, Tex.....	21	(Sept. 10 Sept. 29 Sept. 6	Sept. 12 10 Sept. 15	23.4 31.0 25.8	Sept. 11. Sept. 30. Sept. 8.
Hidalgo, Tex.....	22	(Sept. 6 Sept. 30 Sept. 6	Sept. 15 12 Sept. 21	25.8 25.8 21.8	Sept. 8. 2. Sept. 10-15.
Mercedes, Tex.....	20	(Sept. 25 23 Sept. 9	18 25 Sept. 22	21.8 20.8 18.3	2-4, 10. 24. Sept. 12, 14-16.
Brownsville, Tex.....	18	(Sept. 25	17	18.3	Sept. 29-3.

Statement of Flood Losses

ATLANTIC SLOPE DRAINAGE

SUSQUEHANNA RIVER IN NEW YORK

Matured crops.....	\$325
Livestock and other movable property.....	1,000

JAMES RIVER IN VIRGINIA

Tangible property totally or partially destroyed.....	295
Matured crops.....	13,450
Livestock and other movable property.....	140
Suspension of business, including wages of employees.....	2,450

ROANOKE RIVER IN VIRGINIA AND NORTH CAROLINA

Tangible property totally or partially destroyed.....	10,000
Matured crops.....	37,500
Livestock and other movable property.....	1,000
Suspension of business, including wages of employees.....	2,500

CAPE FEAR RIVER IN NORTH CAROLINA

Tangible property totally or partially destroyed.....	1,000
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PEEDEE RIVER IN SOUTH CAROLINA

Matured crops.....	1,600
Livestock and other movable property.....	100

SALUDA RIVER IN SOUTH CAROLINA

Matured crops.....	200
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CONGAREE RIVER IN SOUTH CAROLINA

Matured crops.....	1,000
Livestock and other movable property.....	200

CATAWBA RIVER IN SOUTH CAROLINA

Matured crops.....	1,500
Prospective crops.....	500

SANTEE RIVER IN SOUTH CAROLINA

Livestock and other movable property.....	280
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SAVANNAH RIVER IN SOUTH CAROLINA AND GEORGIA

Matured crops.....	3,000
Prospective crops.....	1,000

EAST GULF OF MEXICO DRAINAGE

BLACK WARRIOR RIVER IN ALABAMA

Tangible property totally or partially destroyed.....	2,500
Matured crops.....	139,250
Prospective crops.....	11,000
Livestock and other movable property.....	7,000
Suspension of business, including wages of employees.....	5,500

TOMBIGBEE RIVER IN MISSISSIPPI AND ALABAMA

Tangible property totally or partially destroyed.....	12,750
Matured crops.....	39,325
Prospective crops.....	13,000
Livestock and other movable property.....	16,950
Suspension of business, including wages of employees.....	2,200

CHICKASAWHAY RIVER IN MISSISSIPPI

Matured crops.....	100
Livestock and other movable property.....	100
Suspension of business, including wages of employees.....	100

MISSISSIPPI SYSTEM

OHIO BASIN

FRENCH BROAD RIVER IN NORTH CAROLINA

Matured crops.....	3,000
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ELK RIVER IN TENNESSEE

Tangible property totally or partially destroyed.....	1,000
Matured crops.....	2,000
Livestock and other movable property.....	100

WEST GULF OF MEXICO DRAINAGE

TRINITY RIVER IN TEXAS

Tangible property totally or partially destroyed.....	34,800
Matured crops.....	10,500
Prospective crops.....	2,500
Suspension of business, including wages of employees.....	2,000

NUECES RIVER IN TEXAS

Tangible property totally or partially destroyed.....	30,500
Matured crops.....	1,000
Prospective crops.....	4,500
Livestock and other movable property.....	300
Suspension of business, including wages of employees.....	4,500

PECOS RIVER IN NEW MEXICO AND TEXAS

Tangible property totally or partially destroyed.....	60,000
Matured crops.....	15,000

RIO GRANDE RIVER IN TEXAS

Tangible property totally or partially destroyed.....	2,000,000
Matured crops.....	25,000
Prospective crops.....	300,000
Livestock and other movable property.....	150,000
Suspension of business, including wages of employees.....	25,000

ESTIMATED VALUE OF PROPERTY SAVED BY WARNINGS

Susquehanna River in New York.....	\$5,000
James River in Virginia.....	19,000
Roanoke River in Virginia and North Carolina.....	50,000
Cape Fear River in North Carolina.....	2,000
Pee Dee River in South Carolina.....	23,000
Saluda River in South Carolina.....	500
Broad River in South Carolina.....	700
Congaree River in South Carolina.....	6,000
Catawba-Wateree River in South Carolina.....	9,500
Santee River in South Carolina.....	8,850
Savannah River in South Carolina and Georgia.....	3,000
Black Warrior River in Alabama.....	63,000
Tombigbee River in Mississippi and Alabama.....	143,000
Elk River in Tennessee.....	1,000
Trinity River in Texas.....	48,950
Nueces River in Texas.....	15,000
Rio Grande River in Texas.....	500,000

Total..... 898,500

THE WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

(By the Marine Division, W. F. McDonald in charge)

NORTH ATLANTIC OCEAN

By W. F. McDONALD

Atmospheric pressure.—The Atlantic HIGH during October, 1932, was especially stable from the Azores eastward over the Iberian Peninsula and northwestern Africa. This condition is reflected in the average pressure for the month (see Table 1), which was more than a tenth of an inch above normal over the middle and southeastern Atlantic.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic and its shores, October, 1932

Stations	Average pressure	Departure from normal	High-est	Date	Lowest	Date
	Inches	Inch	Inches		Inches	
Julianehaab, Greenland.....	29.85	—0.07	30.50	1	29.49	14
Reykjavik, Iceland.....	29.61	—0.25	30.25	3	29.11	20
Lerwick, Shetland Islands.....	29.54	—0.13	30.03	5	28.94	14
Valencia, Ireland.....	29.78	—0.07	30.24	4	29.10	8
Lisbon, Portugal.....	30.09	+0.07	30.34	23	29.90	9
Madeira.....	30.11	+0.12	30.37	24	29.93	3
Horta, Azores.....	30.28	+0.17	30.49	24	29.84	21
Belle Isle, Newfoundland.....	29.84	—0.03	30.52	25	29.00	23
Halifax, Nova Scotia.....	30.04	0.00	30.46	26	29.28	22
Nantucket.....	30.03	—0.02	30.45	25	29.51	11
Hatteras.....	30.05	—0.01	30.36	8	29.65	17
Bermuda.....	30.02	—0.05	30.22	30, 31	29.56	11
Turks Island.....	29.93	—0.02	30.04	29, 30	29.84	20
Key West.....	29.93	—0.01	30.10	31	29.71	16
New Orleans.....	30.00	—0.03	30.28	28	29.41	16
Cape Gracias, Nicaragua.....	29.82	—0.10	29.92	29, 30, 31	29.72	10

NOTE.—All data based on a. m. observations only, with departures computed from best available normals related to time of observations, except Hatteras, Key West, Nantucket, and New Orleans, which are 24-hour corrected means.

A large deficiency in average pressure occurred in the vicinity of Iceland and the British Isles, with the average at Lerwick, Shetland Islands, a fourth of an inch below

normal. There was, similarly, a noteworthy deficiency at Cape Gracias, where the monthly pressure revealed a departure of unusual degree for that region, in that the average for the month was a tenth of an inch below normal. This resulted from the slow movement of a mild disturbance of tropical origin, which is described more fully below.

Cyclones and gales.—October was not a month of severe weather over the Atlantic. Extratropical cyclones were for the most part confined to the more northern tracks. Moderate to fresh gales occurred at scattered places along the main trans-Atlantic steamer lanes on more than half the days of the month but were most frequent and widespread with the advance of the season toward the end of the month.

On the 17th a disturbance took definite form in a previously existent trough of low pressure over mid-ocean, moved slowly northeastward past the Azores during the four days that followed, and caused the strongest gale reported from the Atlantic area during the month. On the 19th the Dutch S. S. *Deucalion* (G. van der Kooy, master) encountered a north-northeast gale of force 11 near latitude 37° N., longitude 45° W.

Tropical disturbances.—Only one, relatively weak, tropical disturbance of West Indian origin occurred, between the 7th and 18th, as described on page 193 of this REVIEW.

This disturbance reached greatest intensity in the northern Gulf of Mexico, where ships' observers reported gales of force 8 to 9 Beaufort.

Fog.—Fog was not reported south of the forty-fifth parallel except near the American coast. Comparatively few days had fog, even on the northern steamer lanes, the maximum prevalence being over the Grand Banks, where this condition was reported on 8 days, the average number of days of occurrence being only 3 to 5 elsewhere.

OCEAN GALES AND STORMS, OCTOBER, 1932

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN													
Wytheville, Am. S. S.	Antwerp-----	Baltimore-----	49 05 N	40 06 W	Oct. 1	Noon, 1.	Oct. 1	Inches 30.22	SE-----	SE, 7-----	NW-----	—, 9-----	S-W-NW.
Costa Rica, Du. S. S.	Dover-----	Barbados-----	26 29 N	47 44 W	Oct. 2	4 p., 2-----	Oct. 3	30.02	SE-----	SSE, 8-----	S-----	SE, 8-----	SE-S-SE.
J. A. Moffett, jr., Am. M. S.	Boston-----	Corpus Christi-----	26 34 N	91 30 W	Oct. 5	4 a., 5-----	Oct. 5	29.92	N-----	N, 7-----	N-----	N, 8-----	NW-N.
Nitonian, Br. S. S.	Kingston-----	Vera Cruz-----	Off Vera Cruz		do-----	10 a., 5-----	Oct. 6	29.94	W-----	NNW, —-----	NNW-----	—, 10-----	W-NNW.
Virginia, Hond. S. S.	Boston-----	Jamaica-----	42 18 N	70 35 W	Oct. 6	9 p., 6-----	Oct. 8	29.67	SSW-----	SSW, 6-----	WNW-----	W, 8-----	SW-W.
Afoundria, Am. S. S.	Glasgow-----	Panama City, Fla.-----	51 20 N	20 53 W	Oct. 7	2 a., 7-----	do-----	29.44	WSW-----	WSW, 8-----	NW-----	NW, 9-----	
Am. Importer, Am. S. S.	Hamburg-----	New York-----	50 00 N	13 30 W	do-----	4 a., 8-----	Oct. 9	29.17	SSW-----	WNW, 7-----	W-----	SSW, 9-----	SSW-WNW.
San Bruno, Pan. S. S.	Tela-----	Boston-----	17 00 N	86 58 W	Oct. 9	4 p., 9-----	Oct. 10	29.64	SSW-----	SW, 6-----	E-----	ESE, 8-----	SSW-SSE.
Musa, Pan. S. S.	Puerto Cortez-----	New York-----	20 09 N	86 19 W	do-----	10 p., 9-----	do-----	29.74	ESE-----	ESE, 7-----	ENE-----	E, 8-----	
Kenbane Head, Br. S. S.	Montreal-----	Belfast-----	55 32 N	22 06 W	Oct. 6	8 a., 9-----	do-----	29.53	NW-----	NNW, 9-----	N-----	—, 9-----	NNW-N.
Scapenn, Am. S. S.	Copenhagen-----	Wilmington, Del.-----	57 53 N	8 10 E	Oct. 8	10 a., 9-----	Oct. 9	29.18	ESE-----	SE, 7-----	SE-----	SE, 9-----	SE-E.
Am. Importer, Am. S. S.	Hamburg-----	New York-----	49 50 N	31 41 W	Oct. 10	Noon, 10-----	Oct. 10	29.68	W-----	W, 8-----	N-----	NW, 10-----	
West Imboden, Am. S. S.	New York-----	Rio de Janeiro-----	31 05 N	61 24 W	Oct. 9	4 a., 10-----	do-----	29.63	NE-----	SW, 5-----	SW-----	ENE, 9-----	ENE-SW.
El Estero, Am. S. S.	Galveston-----	Boston-----	41 30 N	69 30 W	Oct. 12	Mdt., 12-----	Oct. 13	29.67	NW-----	NW, 8-----	NW-----	—, 8-----	Steady.
Duquesne, Am. S. S.	Rotterdam-----	New Orleans-----	45 50 N	16 13 W	do-----	8 a., 12-----	Oct. 12	29.88	N-----	N, 7-----	N-----	N, 8-----	Do.
Chester Valley, Am. S. S.	Galveston-----	Genoa-----	38 56 N	54 19 W	Oct. 10	6 a., 12-----	do-----	29.67	E-----	S, 6-----	SSE-----	SE, 8-----	
Wm. Boyce Thompson, Am. S. S.	Marcus Hook-----	Houston-----	28 40 N	91 15 W	Oct. 15	4 p., 15-----	Oct. 16	29.50	SSE-----	SSE, 4-----	NW-----	NNW, 8-----	
Comal, Am. S. S.	New Orleans-----	Tampa-----	28 48 N	88 52 W	do-----	2 a., 16-----	Oct. 17	29.39	SSW-----	SSW, 8-----	SW-----	SW, 9-----	Steady.
El Almirante, Am. S. S.	do-----	New York-----	31 00 N	79 00 W	Oct. 16	2 a., 16-----	Oct. 18	29.69	SE-----	SE, 8-----	SE-----	—, 9-----	Do.
Memphis City, Am. S. S.	New York-----	Canal Zone-----	34 00 N	74 00 W	do-----	4 p., 17-----	Oct. 17	29.70	SE-----	SSE, 8-----	SW-----	SE, 9-----	SE-SW.
Graystone Castle, Br. M. S.	Port Said-----	New York-----	36 55 N	44 20 W	Oct. 17	4 p., 17-----	Oct. 18	29.89	Var-----	N, 4-----	N-----	N, 9-----	Steady.
Exeter, Am. S. S.	New York-----	Palma-----	39 58 N	70 10 W	Oct. 19	2 a., 19-----	Oct. 23	29.71	SE-----	E, 3-----	SW-----	SE, 9-----	
Deucalion, Du. S. S.	Haiti-----	Havre-----	36 46 N	44 58 W	Oct. 17	4 a., 19-----	Oct. 20	29.51	NNE-----	NNE, 11-----	NNE-----	NNE, 11-----	Steady.
Seanyork, Am. S. S.	Copenhagen-----	Philadelphia-----	56 52 N	24 52 W	Oct. 19	11 a., 19-----	do-----	28.91	SE-----	WNW, 9-----	W-----	W, 9-----	SE-S-W.
Flandre, Fr. S. S.	St. Nazaire-----	Central America-----	44 00 N	30 00 W	Oct. 21	11 p., 21-----	Oct. 22	29.49	SW-----	SW, 8-----	NW-----	SW, 8-----	SW-NW.
City of Newport News, Am. S. S.	Havre-----	Baltimore-----	40 00 N	51 00 W	Oct. 22	8 a., 22-----	do-----	29.59	S-----	S, 9-----	NW-----	—, 9-----	S-NW.

OCEAN GALES AND STORMS, OCTOBER, 1932—Continued

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN—Continued													
West Madaket, Am. S. S.	Antwerp-----	Mobile-----	50 30 N	1 00 W	Oct. 23	8 p., 23-----	Oct. 24	29.63	SW-----	WSW, 9-----	WNW-----	WSW, 9-----	WSW-W.
Marie Leonhardt, Ger. S. S.	Bremen-----	Searsport, Me.-----	51 12 N	26 05 W	Oct. 26	Noon, 26-----	Oct. 26	29.92	W-----	W, 8-----	NW-----	NW, 10-----	
Hoxie, Am. S. S.	Cork-----	New York-----	50 44 N	14 51 W	do-----	4 a., 27-----	Oct. 28	29.64	NW-----	NW, 7-----	NW-----	NW, 10-----	Steady.
Gonzenheim, Ger. S. S.	Newcastle on Tyne.	Batwood, Newfoundland.	57 32 N	25 10 W	Oct. 28	11 p., 28-----	Oct. 29	29.62	WSW-----	WNW, 8-----	NW-----	WNW, 10-----	W-WNW.
Themisto, Du. S. S.	Durban-----	Montreal-----	41 28 N	52 40 W	do-----	9 a., 29-----	Oct. 30	29.82	S-----	SW, 6-----	SW-----	WSW, 9-----	SW-WNW.
Motocarline, Belg. M. S.	Antwerp-----	Baytown-----	50 21 N	2 14 W	Oct. 29	10 p., 29-----	Oct. 31	29.37	W-----	S, 9-----	NNW-----	WSW, 9-----	S-W-NW.
Marie Leonhardt, Ger. S. S.	Bremen-----	Searsport, Me.-----	49 20 N	42 17 W	Oct. 30	Noon, 30-----	do-----	29.72	SW-----	WSW, 10-----	W-----	WSW, 10-----	Steady.
Themisto, Du. S. S.	Durban-----	Montreal-----	44 32 N	66 14 W	do-----	1 a., 31-----	do-----	29.86	SW-----	SW, 7-----	SW-----	WSW, 9-----	SW-WNW.
NORTH PACIFIC OCEAN													
Stemmestad, Nor. M. S.	San Pedro-----	Yokohama-----	41 21 N	173 53 E	Oct. 2	Noon, 5-----	Oct. 4	29.68	S-----	W, 8-----	NNW-----	WNW, 9-----	SW-W.
Stanley Dollar, Am. S. S.	Philippines-----	Los Angeles-----	24 42 N	136 49 E	do-----	Noon, 3-----	do-----	29.27	N-----	NW, 11-----	W-----	NW, 11-----	N-NW-W.
Silverny, Br. M. S.	Gorontalo-----	San Francisco-----	44 22 N	159 36 W	do-----	7 a., 5-----	Oct. 7	29.34	SW-----	SE, 11-----	S-----	E, 10-----	SE-SSW.
Kiyo Maru, Jap. S. S.	San Pedro-----	Yokohama-----	36 00 N	174 40 W	Oct. 3	8 p., 3-----	Oct. 4	29.78	WSW-----	W, 11-----	NW-----	WNW, 8-----	WSW-W.
Pres. Polk, Am. S. S.	Honolulu-----	Kobe-----	32 55 N	145 00 E	Oct. 4	5 p., 4-----	do-----	29.05	SSE-----	SSE, 10-----	W-----	SSE, 10-----	Steady.
New York, Am. S. S.	Dairen-----	San Francisco-----	43 40 N	148 55 E	do-----	8 a., 5-----	Oct. 5	28.90	SSE-----	NE, 9-----	NW-----	NE, 9-----	ENE-NE.
Koyo Maru, Jap. S. S.	Yokohama-----	Los Angeles-----	36 46 N	146 33 E	Oct. 4	Mdt., 4-----	do-----	28.60	SSE-----	SE, 12-----	NW-----	SSW, 12-----	SE-SSE.
Holystone, Br. S. S.	Panama-----	Vancouver-----	14 15 N	95 45 W	Oct. 5	6 a., 6-----	Oct. 6	29.82	N-----	NNE, 11-----	NNE-----	N, 9-----	N-NNE.
Potter, Am. M. S.	Shanghai-----	San Pedro-----	43 00 N	167 30 E	do-----	1 a., 7-----	Oct. 8	29.17	SW-----	WNW, 11-----	NNE-----	NW, 9-----	W-NW.
Golden Wall, Am. S. S.	Salin, P. I.-----	San Francisco-----	40 10 N	175 25 W	Oct. 6	4 p., 6-----	Oct. 7	29.39	W-----	WSW, 11-----	W-----	W, 8-----	W-WSW.
Soyo Maru, Jap. M. S.	San Francisco-----	Yokohama-----	47 20 N	172 23 W	Oct. 7	2 a., 7-----	Oct. 10	28.71	W-----	NW, 2-----	W-----	W, 9-----	NW-W.
New York, Am. S. S.	Dairen-----	San Francisco-----	46 30 N	170 27 E	Oct. 8	2 p., 10-----	do-----	29.66	WNW-----	WNW, 11-----	WNW-----	WNW, 9-----	Steady.
Stanley Dollar, Am. S. S.	Philippines-----	Los Angeles-----	38 30 N	161 51 E	Oct. 9	10 a., 10-----	do-----	29.39	SE-----	SW, 10-----	W-----	SW, 10-----	S-SW-W.
Golden Sun, Am. S. S.	Columbia River.	Yokohama-----	48 30 N	146 55 W	Oct. 10	2 a., 10-----	do-----	28.81	SW-----	WNW, 8-----	W-----	WNW, 8-----	WNW-SE.
Soyo Maru, Jap. M. S.	San Francisco-----	do-----	45 18 N	170 20 E	Oct. 12	4 a., 12-----	Oct. 13	29.65	W-----	SSE, 3-----	W-----	W, 8-----	SSE-W.
Do.	do-----	do-----	36 37 N	143 37 E	Oct. 17	3 a., 17-----	Oct. 17	29.52	NW-----	NW, 8-----	NW-----	NW, 9-----	ENE-NW.
Niagara, Br. M. S.	Victoria-----	Honolulu-----	46 35 N	128 44 W	Oct. 13	2 p., 13-----	Oct. 15	28.94	S-----	S, 7-----	NW-----	W, 10-----	S-W.
Stanley Dollar, Am. S. S.	Philippines-----	Los Angeles-----	43 05 N	152 58 W	Oct. 17	5 a., 18-----	Oct. 18	29.53	SSE-----	S, 10-----	W-----	S, 10-----	SSE-S-W.
Grays Harbor, Am. S. S.	Tsugaru Strait.	Puget Sound-----	49 55 N	170 02 E	Oct. 20	4 p., 22-----	Oct. 22	29.47	SSE-----	WSW, 8-----	W-----	WSW, 9-----	WSW-WNW.
Tyndareus, Br. S. S.	Yokohama-----	Victoria-----	49 58 N	167 28 W	Oct. 25	9 a., 26-----	Oct. 27	30.07	S-----	S, 8-----	SW-----	S, 9-----	S-SSW.
Oregonian, Am. S. S.	Balboa-----	Los Angeles-----	14 55 N	94 03 W	Oct. 27	4 p., 27-----	do-----	29.86	N-----	N, 8-----	NNE-----	N, 10-----	Steady.
Kiyo Maru, Jap. S. S.	Yokohama-----	San Pedro-----	39 42 N	166 30 E	Oct. 30	8 a., 30-----	Nov. 1	do-----	ESE-----	ESE, 5-----	SSE-----	SE, 8-----	ESE-SSE.

NORTH PACIFIC OCEAN, OCTOBER, 1932

By WILLIS E. HURD

Atmospheric pressure.—The average pressure over the North Pacific Ocean for October, 1932, in general departed very little from normal. The Aleutian Low was strongly developed, with pressures from the western Gulf of Alaska to the central Bering Sea averaging less than 29.6 inches. The North Pacific HIGH crested near the California coast. A rather peculiar pressure abnormality occurred in the China Sea, with Naha reading 0.08 inch above and Manila 0.06 below the average.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean, October, 1932, at selected stations

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches (1)	Inch (1)	Inches (1)	(1)	Inches (1)	(1)
Point Barrow	29.57	-0.08	30.54	25, 31	28.60	8
Dutch Harbor	29.58	-0.05	30.52	31	28.60	8
St. Paul	29.58	-0.01	30.50	5	28.36	19
Kodiak	29.88	+0.01	30.53	5	29.23	14
Juneau	30.06	+0.05	30.56	25	29.47	13
Tatoosh Island	30.02	+0.01	30.25	25	29.72	7
San Francisco	29.83	-0.08	29.96	28, 31	29.74	3, 15
Mazatlan	30.01	+0.01	30.12	15	29.84	4
Honolulu	29.99	-0.04	30.30	26	29.76	29
Midway Island	29.85	-0.01	29.90	7, 31	29.74	24
Guam	29.81	-0.06	29.88	7, 9	29.70	23
Manila	29.98	+0.08	30.18	11	29.80	3
Naha	29.95	+0.04	30.16	11, 21	29.42	3
Chichishima	29.92	-----	30.22	14	29.40	4
Nemuro	29.92	-----	30.22	14	29.40	4

1 Data for 19 days only—not used.

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed from best available normals related to time of observation.

Cyclones and gales.—During the month the region of the North Pacific HIGH was unusually exempt from

cyclones. The majority of LOWS moved in higher latitudes, and comparatively few gales occurred south of latitude 35° N. The number of days with gales was somewhat in excess of that for September, and the weather was rougher, owing to the greater frequency of disturbances, but the winds increased but little in violence, and in our reports no extratropical gales exceeded force 10. In the region of their greatest frequency, south and southwest of the central Aleutians, moderate gales were frequent, but those in excess of force 7 occurred on a few days only in any locality. The accompanying table of gales shows their distribution.

Tropical disturbances.—Apparently three disturbances of tropical origin occurred in far eastern waters. The earliest originated on the last of September, and on the 1st to 3d of October moved slowly northward as a typhoon in the vicinity of the Ogasawara Islands. On the 4th, with greatly increased speed, it passed southeastern Honshu, and was southeast of the Kuril Islands on the 5th. This storm on the 4th caused the highest wind velocity, force 12, thus far reported for the month, and caused gales of force 11 and 10 on the 3d and 5th, respectively.

The second disturbance originated east of the North China Sea on or about the 7th and moved northeastward at some distance from the Japanese coast until the 10th, when it entered the low-pressure region of the Aleutians. During its passage gales of force 9 to 10 were reported from the Ogasawara Islands northward.

The third tropical cyclone developed in lower Philippine waters on the 23d, and from the 24th to 27th it lay in the channel between Luzon and Taiwan, later moving west-southwest into the South China Sea. There are no details as to its intensity except for reports of northerly gales near Taiwan and Luzon on the 26th.

In Mexican waters northers of moderate gale force occurred on the 6th and 21st over or south of the Gulf of Tehuantepec, of strong gale force on the 5th, and of whole gale force on the 27th.

On the 11th the Tehuantepec region and neighboring Central American waters were disturbed by a depression which crossed the Yucatan Peninsula from the Caribbean into the Gulf of Mexico. On the Pacific side this depression resulted in moderate gales.

The northeast monsoon.—Owing to the strong formation of anticyclones on the Asiatic coast, the northeast monsoon blew with considerable force in the China Seas on several days.

Fog.—Fog lessened materially over the whole Pacific, except along the American coast, as compared with its occurrence in September. It formed on only a few scattered dates along the northern routes. It was observed on 19 days at one place or another on the California coast.

CLIMATOLOGICAL TABLES

CONDENSED CLIMATOLOGICAL SUMMARY

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course, the number of such records is smaller than the total number of stations.

Condensed climatological summary of temperature and precipitation by sections, October, 1932

[Compiled by Annie E. Small]

[For description of tables and charts, see REVIEW, January, p. 37]

Section	Temperature								Precipitation					
	Section average	Departure from the normal	Monthly extremes						Section average	Departure from the normal	Greatest monthly		Least monthly	
			Station	Highest	Date	Station	Lowest	Date			Station	Amount	Station	Amount
Alabama.....	62.8	-1.7	Thomasville.....	89	25	Valley Head.....	30	7	6.43	+3.76	Dothan.....	12.41	Union Springs.....	1.27
Arizona.....	62.2	-0.4	Agua Caliente.....	101	7	Alpine.....	10	18	1.22	+0.45	Pinal Ranch.....	3.95	Tuba City.....	0.00
Arkansas.....	60.8	-1.6	3 stations.....	94	18	Lead Hill.....	26	6	3.41	+0.24	Ariberg.....	6.12	Springbank.....	0.91
California.....	60.0	+0.2	Greenland Ranch.....	106	6	Lake Sebrina.....	11	18	0.35	-0.80	Cuyamaca.....	5.52	77 stations.....	0.00
Colorado.....	45.7	-1.2	Las Animas.....	90	1	Pearl.....	-15	25	0.93	-0.30	Steamboat Springs.....	3.05	3 stations.....	T.
Florida.....	73.7	+0.7	4 stations.....	94	14	Garniers (near).....	37	17	4.31	+0.04	Miami.....	17.43	Kissimmee.....	0.72
Georgia.....	64.8	-0.1	Millen.....	92	19	2 stations.....	29	7	5.09	+2.36	Hartwell.....	10.76	Fargo.....	1.92
Idaho.....	45.5	-1.2	Orofino.....	91	3	Blackfoot Dam.....	0	20	1.12	-0.30	Roland.....	5.29	2 stations.....	0.00
Illinois.....	54.3	-1.0	2 stations.....	86	2	2 stations.....	21	30	3.91	+1.19	Elgin.....	6.09	Quincy.....	2.20
Indiana.....	54.7	+0.1	do.....	89	2	Marengo.....	22	30	3.93	+1.19	Laporte.....	6.85	Vevay.....	2.20
Iowa.....	49.6	-1.9	4 stations.....	90	2	2 stations.....	19	30	1.79	-0.61	Tipton (near).....	4.80	Creston.....	0.32
Kansas.....	55.2	-1.7	5 stations.....	92	16	Leoti.....	14	29	0.99	-1.12	Phillipsburg.....	3.27	Tribune.....	0.18
Kentucky.....	56.8	-1.4	2 stations.....	85	13	Farmers.....	24	30	3.31	+0.54	Jenkins.....	5.33	Cynthiana.....	1.85
Louisiana.....	66.2	-1.9	Plain Dealing.....	94	18	Robeline.....	29	27	5.23	+1.91	Lafayette.....	10.16	Minden.....	0.30
Maryland-Delaware.....	56.7	+0.5	Western Port, Md.....	88	3	Grantsville, Md.....	22	31	6.39	+3.51	State Sanatorium, Md.....	12.68	Friendsville, Md.....	3.53
Michigan.....	48.5	-0.5	Paw Paw.....	81	2	Roscommon (No. 2).....	14	13	4.70	+1.97	Harrisville.....	7.63	Alpha.....	0.99
Minnesota.....	43.0	-2.7	2 stations.....	87	1	Mizpah.....	5	9	1.51	-0.42	Pigeon River Bridge.....	5.59	Reeds.....	0.25
Mississippi.....	62.8	-2.4	5 stations.....	89	12	Stoneville.....	31	6	6.32	+3.67	2 stations.....	9.95	Scott.....	1.33
Missouri.....	55.7	-1.7	Lamar.....	90	18	2 stations.....	22	16	3.45	+0.56	Greenville.....	7.32	Oregon.....	0.99
Montana.....	42.1	-2.2	Big Timber.....	87	1	Browning.....	-10	9	1.50	+0.51	Crow Agency.....	5.26	Helena Valley.....	0.31
Nebraska.....	48.9	-2.2	3 stations.....	93	2	Gordon.....	2	10	1.29	-0.31	Bruning.....	2.28	Kimball.....	0.10
Nevada.....	51.1	+0.1	Logandale.....	96	15	Zorra Vista Ranch.....	5	20	0.18	-0.46	Beatty.....	1.95	12 stations.....	0.00
New England.....	51.9	+2.3	Waterbury, Conn.....	86	9	Keene (near), N. H.....	16	14	4.95	+1.38	Pinkham Notch, N. H.....	10.04	Eustis, Me.....	1.22
New Jersey.....	56.2	+1.4	Bridgeton.....	89	4	Runyon.....	21	31	5.85	+2.18	Charlotteburg.....	9.64	Asbury Park.....	3.53
New Mexico.....	52.2	-1.3	Agricultural College.....	93	16	Crown Point.....	2	25	1.02	-0.17	Redrock.....	4.25	Ramah.....	0.06
New York.....	52.5	+2.6	5 stations.....	83	12	2 stations.....	20	14	6.04	+2.71	McKeever.....	11.08	Canadea Dam.....	2.47
North Carolina.....	60.5	+0.6	Nashville.....	89	4	Mount Mitchell.....	14	28	7.46	+4.03	Rock House.....	17.16	Fayetteville.....	3.21
North Dakota.....	38.3	-5.2	New England.....	90	1	Westhope.....	-3	29	2.31	+1.27	Larimore.....	4.11	Tagus.....	0.66
Ohio.....	54.4	+0.7	Middleport.....	85	3	Peebles (near).....	24	30	3.47	+0.79	Lima.....	5.34	Philo (I).....	1.61
Oklahoma.....	60.7	-1.2	Cherokee.....	97	18	Boise City.....	20	29	2.09	-1.19	Okmulgee.....	5.77	Buffalo.....	0.24
Oregon.....	50.5	+1.0	Jacksonville.....	100	3	2 stations.....	5	24	1.87	-0.01	Headworks.....	13.66	Fremont.....	0.07
Pennsylvania.....	53.8	+1.4	Hyndman.....	86	3	3 stations.....	20	14	5.31	+2.05	Newport.....	11.90	Sharon.....	1.78
South Carolina.....	63.7	+0.1	Trenton.....	89	24	2 stations.....	31	7	6.99	+3.93	Caesars Head.....	14.51	Alken.....	3.47
South Dakota.....	44.7	-3.5	Vermillion.....	94	2	Pollock.....	6	31	1.18	-0.16	Rockford.....	3.30	Onida.....	0.46
Tennessee.....	58.7	-0.8	Newbern.....	89	1	Rugby.....	25	28	5.39	+2.57	Tullahoma.....	9.87	Milan.....	2.24
Texas.....	65.2	-2.4	Booker.....	100	17	Alpine.....	23	26	0.93	-1.83	Brownsville.....	6.36	15 stations.....	0.00
Utah.....	47.7	-0.8	St. George.....	89	14	Woodruff.....	0	26	0.62	-0.63	Santaquin.....	2.90	Thompsons.....	0.00
Virginia.....	58.0	+0.6	Christchurch.....	86	1	Emory.....	26	7	7.01	+3.88	Roanoke.....	12.01	Dahlgren.....	3.83
Washington.....	50.0	+0.9	Rock Island.....	92	2	Republic.....	10	29	3.55	+0.38	Paradise Inn.....	17.27	Mansfield (near).....	T.
West Virginia.....	54.9	+0.5	Martinsburg.....	90	16	Marlinton.....	22	29	3.91	+0.82	Harpers Ferry.....	7.21	Dam 19, Ohio River.....	2.12
Wisconsin.....	45.5	-2.4	5 stations.....	84	11	2 stations.....	14	10	1.99	-0.44	Beloit.....	4.87	Tomahawk.....	0.73
Wyoming.....	39.9	-2.7	2 stations.....	80	11	do.....	-7	20	1.24	-0.06	Dome Lake.....	4.58	Leo (near).....	0.16
Alaska (September).....	42.2	-2.1	Petersburg.....	70	28	McKinley Park.....	5	22	4.15	+0.65	Yakutat.....	23.61	Shishmaref.....	0.39
Hawaii.....	74.3	+0.5	Mahukona.....	93	1	Kanalohuluhulu.....	45	18	2.44	-3.23	Hiloa-Manawaio-puna Divide.....	18.00	6 stations.....	0.00
Puerto Rico.....	78.8	+0.7	Central Aguirre.....	96	18	Guineo Reservoir.....	51	1	7.44	-0.77	San German.....	15.29	Santa Isabel.....	2.11

¹ Other dates also.

TABLE 1.—Climatological data for Weather Bureau stations, October, 1932

(Compiled by Annie E. Small)

District and station	Elevation of instruments			Pressure			Temperature of the air										Precipitation			Wind							Snowfall	Snow, sleet, and ice on ground at end of month																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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TABLE 1.—Climatological data for Weather Bureau stations, October, 1932—Continued

District and station	Elevation of instruments			Pressure			Temperature of the air										Precipitation			Wind				Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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District and station	Elevation of instruments			Pressure			Temperature of the air										Precipitation			Wind				Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month				
	Barometer above sea level	Thermometer above ground	Anemometer above ground	Station, reduced to mean of 24 hours	Sea level, reduced to mean of 24 hours	Departure from normal	Mean max. + mean min. +2	Departure from normal	Maximum	Date	Mean maximum	Minimum	Date	Mean minimum	Greatest daily range	Mean wet thermometer	Mean temperature of the dew point	Mean relative humidity	Total	Departure from normal	Days with 0.01, or more	Total movement	Prevailing direction							Maximum velocity			
																														Miles per hour	Direction	Date	
Northern Slope																																	
Billings	3,140	5					44.0		83	1	58	12	31	30	50				2.10	1.41	+0.4	9		nw.			6	6	19	16.3			
Havre	2,505	11	67	27.38	30.05	+0.07	42.6	-1.9	82	1	53	17	10	32	44	36	30	68	0.66	0.0		10	7,049	sw.	32	w.	14	4	12	15	6.8	3.4	0.0
Helena	4,124	89	113	25.84	30.08	+0.05	43.2	-1.7	79	5	53	16	9	34	41	37	30	61	0.85	0.0		6	6,302	sw.	25	sw.	25	2	15	14	7.1	6.6	0.0
Kalispell	2,973	48	56	27.00	30.09	+0.08	42.2	-1.3	78	2	51	12	9	33	38	38	34	74	1.35	+0.3		14	4,392	nw.	25	ne.	27	3	20	7.5	1.9	0.5	
Miles City	2,371	48	55	27.51	30.10	+0.10	42.0	-1.5	80	1	52	13	20	32	41	36	31	71	2.32	+1.4		11	5,089	s.	29	nw.	28	7	12	6.2	18.9	0.0	
Rapid City	3,259	50	58	26.61	30.07	+0.06	43.2	-5.3	79	1	54	13	10	32	40	36	30	65	1.22	+0.3		9	6,556	n.	38	nw.	28	10	9	12	5.5	9.5	0.0
Cheyenne	6,088	84	101	24.01	30.02	+0.01	42.9	-1.9	75	2	55	15	25	30	43	34	25	56	0.41	-0.6		7	9,329	w.	51	w.	23	18	7	6	3.7	2.3	0.0
Lander	5,372	60	68	24.68	30.09	+0.05	41.4	-2.1	79	5	55	5	20	28	45	33	26	64	2.02	+0.7		6	3,753	sw.	29	s.	16	15	9	7	4.3	11.4	0.0
Sheridan	3,790	10	47	26.14	30.10		39.8		79	5	54	4	31	26	51	33	28	74	3.27	+2.2		12	4,393	nw.	27	nw.	28	10	12	9	5.0	23.3	2.0
Yellowstone Park	6,241	11	48	23.94	30.15	+0.13	36.0	-5.5	71	5	47	12	30	25	41	29	23	64	1.01	-0.4		13	5,922	sw.	29	sw.	27	6	12	13	6.1	17.6	1.0
North Platte	2,821	11	51	27.07	30.02		48.4	-1.3	88	2	62	20	29	35	50	38	31	63	1.03	0.0		6	5,942	w.	32	n.	28	19	4	8	3.9	0.4	0.0
Middle Slope																																	
Denver	5,292	106	113	24.74	30.01		48.6	-2.6	82	16	62	16	25	36	39	38	27	52	0.99	-0.1		5	5,681	s.	32	ne.	28	17	8	6	3.8	7.0	0.0
Pueblo	4,685	80	86	25.30	30.00	+0.01	52.0	-0.0	84	6	67	26	29	37	45	40	28	49	0.54	-0.1		4	5,000	se.	30	nw.	22	15	14	2	3.7	T.	0.0
Concordia	1,392	50	58	28.55	30.03		53.6	-2.3	85	7	65	29	30	42	40	45	38	66	2.43	+0.5		6	6,407	sw.	26	nw.	18	18	9	4	3.3	T.	0.0
Dodge City	2,509	10	86	27.41	30.02		54.5	-1.6	88	7	69	27	29	40	42	43	36	61	0.71	-0.6		4	9,088	sw.	32	ne.	3	24	6	1	2.1	T.	0.0
Wichita	1,358	85	93	28.56	30.00	-0.03	56.8	-1.8	88	18	69	34	29	45	37	46	38	56	0.40	-2.2		5	8,238	n.	32	sw.	7	17	9	5	3.6	0.0	0.0
Oklahoma City	1,214	10	47	28.73	30.01	-0.02	60.4	-1.1	91	18	73	35	26	48	38	49	42	61	1.89	-1.0		4	7,506	s.	32	nw.	3	21	6	4	2.7	0.0	0.0
Southern Slope																																	
Abilene	1,738	10	52	28.21	30.02	+0.01	62.6	-2.8	90	18	75	36	26	50	35	52	46	64	0.34	-2.2		5	6,967	s.	27	n.	3	17	8	6	3.7	0.0	0.0
Amarillo	3,676	10	49	26.28	30.00		58.3	+0.6	86	17	72	32	29	45	39	46	37	58	0.64	-1.0		4	6,749	sw.	25	n.	3	18	8	5	3.2	T.	0.0
Big Spring	2,537	5	62	27.40	30.03		60.4		87	17	73	32	26	48	38	50	46	70	0.51			7		s.			17	6	8	4.2	0.0	0.0	
Del Rio	944	64	71	28.98	29.97	-0.01	66.8	-3.2	87	17	77	41	26	56	30	59	55	73	0.12	-1.7		4	6,261	se.	32	nw.	25	15	7	9	4.3	0.0	0.0
Roswell	3,566	75	85	26.40	30.00	+0.04	56.6	-2.9	85	17	69	29	26	44	42	48	42	67	0.57	-0.8		5	5,151	s.	30	ne.	3	20	7	4	3.2	T.	0.0
Southern Plateau																																	
El Paso	3,778	152	175	26.20	29.96	+0.04	62.6	-0.9	84	15	74	36	26	51	36	51	44	58	0.53	-0.3		7	7,003	e.	43	w.	18	20	6	5	2.9	0.0	0.0
Albuquerque	4,972	51	66	25.08	29.95		54.0		80	14	68	29	26	40	38	43	34	56	1.46			9	3,927	ne.	26	e.	20	16	10	5	3.6	0.4	0.0
Santa Fe	7,013	38	53	23.28	29.99	+0.03	47.4	-3.0	73	3	60	22	25	35	35	38	31	60	0.96	-0.2		8	4,424	e.	19	sw.	9	16	8	7	4.0	3.0	0.0
Flagstaff	6,907	10	59	23.37	29.94	+0.02	46.8	+2.1	74	14	62	15	19	32	41	37		62	2.55			6	6,398	nw.	30	sw.	17	17	9	5		T.	0.0
Phoenix	1,108	10	107	28.72	29.87	-0.01	71.5	+0.9	96	4	86	45	19	58	38	66	45	62	1.73	+1.3		5	4,448	e.	34	n.	8	23	6	2	1.1	0.0	0.0
Yuma	1,141	9	54	29.72	29.87		72.8	-0.5	99	4	87	48	26	59	38	59	50	53	3.39	+3.1		3	3,829	ne.	31	n.	24	25	4	2	1.5	0.0	0.0
Independence	3,957	6	27	26.01	30.04	+0.09	59.2	+1.7	88	1	75	35	20	44	40	43		43	0.13	-0.2		1		nw.			26	5	0		0.0	0.0	
Middle Plateau																																	
Reno	4,532	74	81	25.54	30.05	+0.06	52.6	+2.9	84	5	69	22	21	36	44	40	27	42	0.09	-0.3		1	4,848	w.	31	sw.	22	26	2	3	1.8	T.	0.0
Tonopah	6,090	12	20				53.6		79	4	65	26	18	42	29	39	24	36	T.			0		nw.			22	24	5	2	1.9	T.	0.0
Winnemucca	4,344	18	56	25.70	30.12	+0.07	48.0	-0.3	84	5	67	15	25	29	50	36	23	46	0.06	-0.6		1	5,359	ne.	30	w.	22	24	5	2	1.9	T.	0.0
Modena	5,473	10	46	24.65	29.99	+0.03	48.6	+0.6	78	15	64	19	31	33	46	37	24	46	0.29	-0.4		2	7,314	sw.	29	sw.	16	22	7	2	2.1	T.	0.0
Salt Lake City	4,360	163	203	25.67	30.05	+0.04	51.1	-1.4	78	6	61	28	25	41	31	41	29	45	1.06	-0.4		3	5,498	nw.	31	nw.	22	19	7	5	3.1	T.	0.0
Grand Junction	4,602	60	68	25.40	29.99		52.0	-0.8	82	2	66	25	25	38	37	39	27	45	0.17	-0.8		3	4,363	n.	27	s.	17	20	7	4	2.8	T.	0.0
Northern Plateau																																	
Baker	3,471	48	53	26.54	30.14	+0.06	47.4	+0.8	82	1	60	25	30	35	41	39	32	60	0.52	-0.4		6	4,640	se.	24	sw.	14	12	8	11	4.8	0.3	T.
Boise	2,739	79	87	27.25	30.13	+0.07	50.9	-0.2	82	1	63	25	24	38	34	42	33	55	0.40	-0.8		7	3,802	nw.	21	nw.	18	15	9	7	4.2	T.	0.0
Lewiston	757	40	48	29.29	30.11	+0.04	54.0	+2.5	86	1	65	30	24	43	40				1.17	-0.1		10	2,669	e.	21	nw.	27	8	6	17	6.8	0.0	0.0
Pocatello	4,477	60	68	25.54	30.08	+0.04	47.1	-1.3	80	2	60	17	24	35	40	37	26	47	0.09	-1.1		3	6,433	se.	24	sw.	22	16	9	6	4.3	0.0	0.0
Spokane	1,929	101	118	28.03	30.10	+0.04	49.2	+0.9	81	1	58	28	30	40	39	43	35	64	1.14	0.0		8	4,609	s.	29	sw.	27	7	9	15	6.5	0.0	0.0
Walla Walla	991	57	65	29.01	30.08	+0.01	55.9	+2.4	84	2	65	37	9	47	30	47	37	54	1.48	0.0		8	4,115	s.	23	w.	13	11	6	14	5.8	0.0	0.0
Yakima	1,076	58	67	28.93	30.09		52.6	+2.4	89	2	64	25	30	41	38	45	37	60	0.41	-0.2		6	3,659	nw.	29	w.	27	8	10	13	6.2	T.	0.0
North Pacific Coast Region																																	
North Head	211	11	56	29.88	30.11	+0.06	53.0	+0.1	85	3	57	43	28	49	38	51	49	91	5.58	+0.6		18	9,446	s.	45	nw.	29	2	8	21	8.0	0.0	0.0
Port Angeles	29	8	53		30.10		50.6		74	3	58	35	30	44	24				2.06	-0.3		15	3,599	s.	18	sw.	27	4	10	17		0.0	0.0
Seattle	125	215	250	29.95	30.05	+0.03	54.1	+2.7	82	4	60	40	30	48	25	50	47	77	3.10	+0.3		17	5,747	se.	35	s.	27	3</					

TABLE 2.—Data furnished by the Canadian Meteorological Service, October, 1932

(Compiled by Annie E. Small)

Stations	Altitude above mean sea level, Jan. 1, 1910	Pressure			Temperature of the air						Precipitation		
		Station reduced to mean of 24 hours	Sea level reduced to mean of 24 hours	Depart- ure from normal	Mean max. + mean min. +2	Depart- ure from normal	Mean maxi- mum	Mean mini- mum	Highest	Lowest	Total	Depart- ure from normal	Total snowfall
	Feet	In.	In.	In.	° F.	° F.	° F.	° F.	° F.	° F.	In.	In.	In.
Cape Race, N. F.	99							38.9		24	2.77		0.0
Sydney, C. B. I.	48												
Halifax, N. S.	88												
Yarmouth, N. S.	65												
Charlottetown, P. E. I.	38												
Chatham, N. B.	28												
Father Point, Que.	20	29.90	29.92	-0.03	43.7	+3.9	50.6	36.9	74	20	2.87	-0.03	1.1
Quebec, Que.	206	29.64	29.96	-0.04	46.0	+3.6	52.2	39.9	76	25	2.50	-0.56	1.0
Doucet, Que.	1,236				38.3		46.9	29.7	65	-2	9.18		5.9
Montreal, Que.	187	29.75	29.96	-0.05	49.2	+4.4	56.0	42.4	76	30	6.13	+3.00	T.
Ottawa, Ont.	236	29.70	29.96	-0.05	48.9	+5.1	58.0	39.8	78	26	4.40	+1.85	0.0
Kingston, Ont.	285	29.66	29.97	-0.06	51.5	+4.5	58.3	44.8	72	30	3.89	+1.16	T.
Toronto, Ont.	379	29.56	29.97	-0.07	51.4	+4.8	58.6	44.1	73	33	1.82	-0.64	0.3
Cochrane, Ont.	930				37.0		43.5	30.6	68	14	5.33		15.0
White River, Ont.	1,244	28.60	29.94	-0.04	35.4	-1.7	44.1	26.7	70	8	2.89	+0.64	8.0
London, Ont.	808				49.2		57.5	41.0	72	24	3.21		T.
Southampton, Ont.	656	29.22	29.94	-0.08	49.6	+3.5	57.2	42.1	72	30	4.27	+1.10	T.
Parry Sound, Ont.	688	29.23	29.93	-0.08	47.8	+3.9	54.4	41.2	69	30	6.07	+2.15	1.2
Port Arthur, Ont.	644	29.24	29.95	-0.03	40.9	+1.0	47.6	34.2	73	18	2.19	-0.37	3.2
Winnipeg, Man.	760	29.16	30.01	+0.03	36.9	-2.2	44.1	29.7	67	12	2.06	+0.36	1.0
Minnedosa, Man.	1,090	28.15	30.00	+0.03	33.8	-4.0	42.2	25.5	72	9	1.98	+0.78	14.1
Le Pas, Man.	860				31.4		38.8	24.0	67	12	1.18		4.1
Qu'Appelle, Sask.	2,115	27.69	29.98	+0.01	33.2	-6.2	42.3	24.1	78	-2	1.13	+0.03	6.1
Moose Jaw, Sask.	1,759				35.5		45.1	25.9	80	-1	1.07		4.3
Swift Current, Sask.	2,392	27.41	29.97	.00	38.4	-3.7	49.4	27.4	77	6	0.72	-0.16	5.3
Medicine Hat, Alb.	2,365												
Calgary, Alb.	3,540												
Banff, Alb.	4,521												
Prince Albert, Sask.	1,450	28.43	30.03	+0.06	33.9	-3.2	42.0	25.9	73	10	1.04	+0.21	4.2
Battleford, Sask.	1,592	28.26	30.04	+0.07	34.6	-5.0	45.1	24.0	76	5	0.50	+0.05	2.2
Edmonton, Alb.	2,150												
Kamloops, B. C.	1,262												
Victoria, B. C.	230	29.83	30.09	+0.08	52.1	+2.9	57.2	47.1	76	40	2.34	-0.03	0.0
Barkerville, B. C.	4,180												
Estevan Point, B. C.	20												
Prince Rupert, B. C.	170												
Hamilton, Ber.	151												

LATE REPORTS FOR SEPTEMBER, 1932

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SEVERE LOCAL STORMS, OCTOBER, 1932

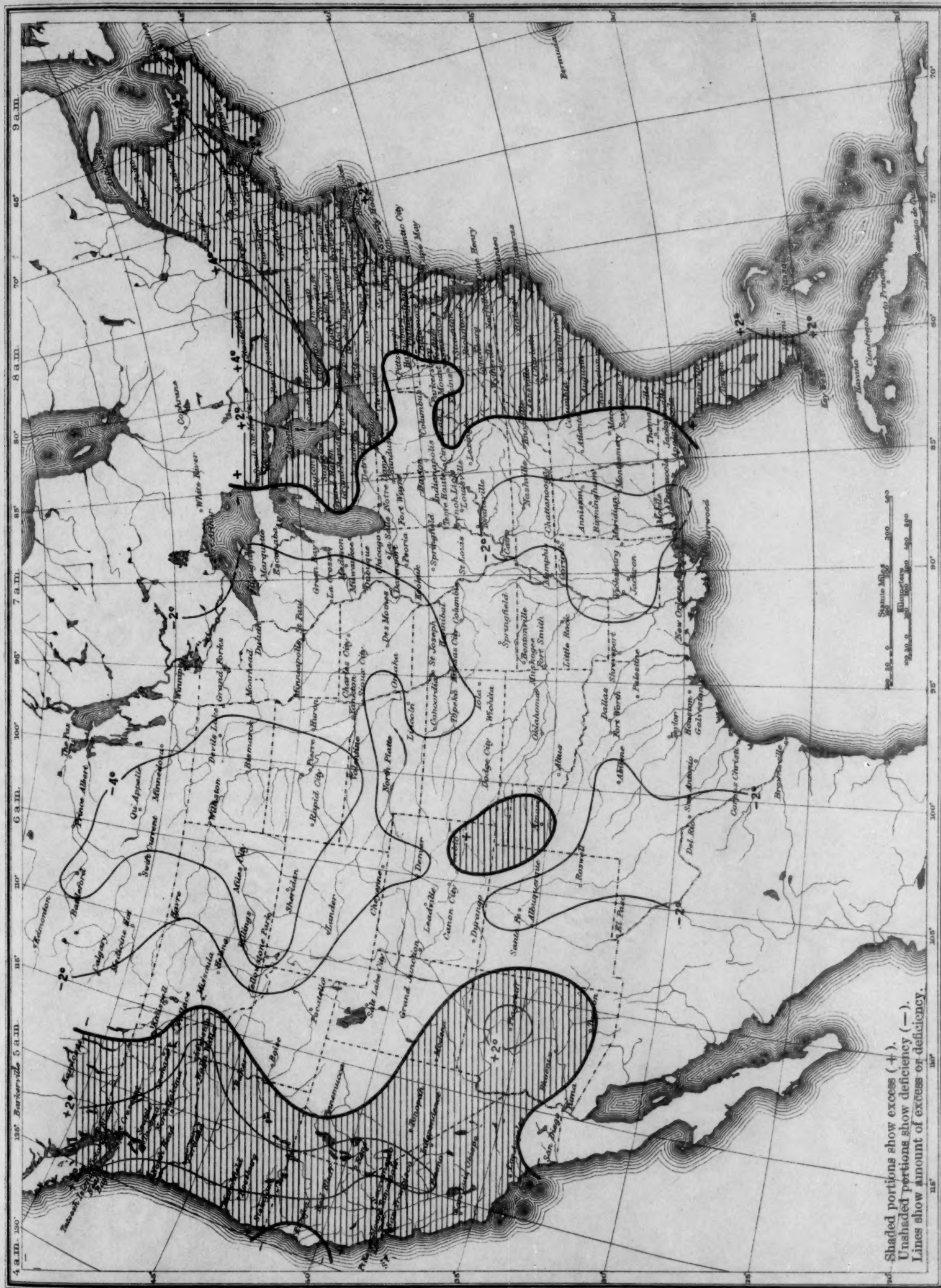
(Compiled by Mary O. Souder)

[The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A revised list of tornadoes will appear in the Annual Report of the Chief of Bureau]

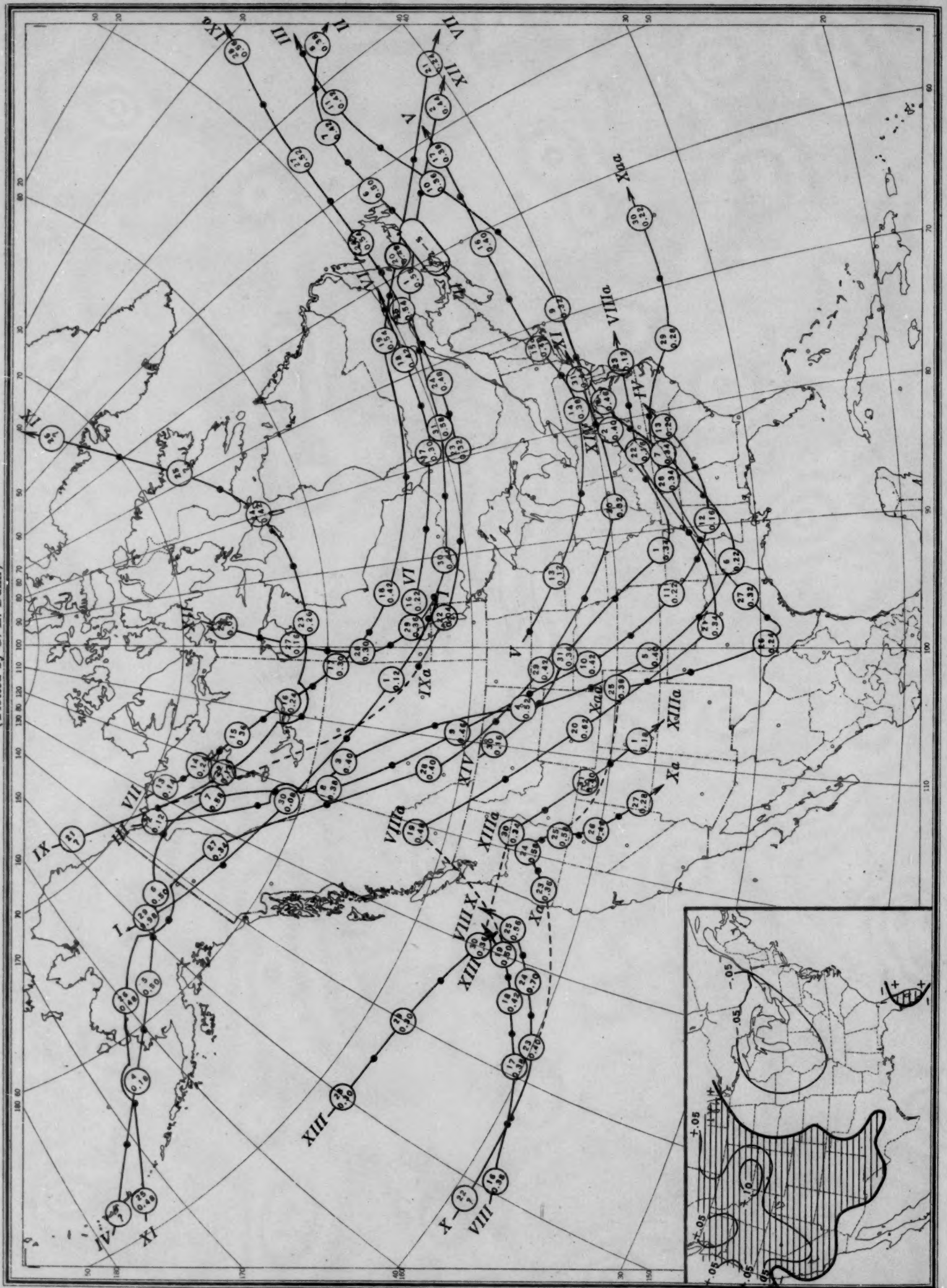
Place	Date	Time	Width of path (yards)	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Fontana, Calif.	1	4 p. m.	13			Hailstorm	Auto tops and roofs damaged; poultry killed	Official, U. S. Weather Bureau.
Canton, N. Y.	2	1 a. m.				Electrical	Barn destroyed	Do.
Payetteville, Ark.	3				\$1,500	do.	2 horses killed; barn and contents destroyed	Do.
Pine Bluff, Ark. (7 miles north)	4	2:30 a. m.	880		3,000	Tornado	Property damaged	Do.
Eureka, Calif.	5					Electrical	2 houses struck by lightning; several thousand dollars damage	Do.
Myrtle Beach, S. C.	5				25,000	Thunderstorm	Dwelling burned after being struck by lightning	Do.
Eastern Delaware County, N. Y.	5-6				125,000	Heavy rain and flood	No details	Do.
Margarettsville, N. C., and vicinity	5-6		50	1	35,000	Tornado winds	Church, store, and a dozen houses destroyed; corn shocks torn up; path torn out in woods; number of persons injured	Do.
Southampton County, Va.	6			1	7,500	do.	Damage to buildings	Do.
Eastern shore of Lake Okechobee, Fla.	7	P. m.				Heavy rain	Crop loss on 10,000 acres; 40 square miles under water	Do.
Phoenix, Ariz.	8	A. m.				Electrical, rain, and wind	Electric wires and property damaged; streets flooded	Do.
Yuma, Ariz., north of	9-10				6,000	Heavy rain	15,000 acres of land flooded	Do.
Brewerton (near), N. Y.	10-11				60,000 70,000	Gale	Power lines disabled; property damaged; considerable loss in apple crop; 3 barges loaded with grain, bound from Buffalo to Albany, sunk	Do.
New Haven, Conn., and vicinity	10-11				1,000,000	Gale and storm tides	Much damage to roads and property; sea wall battered	Do.
Pensacola (near), Fla.	15	1:18 p. m.			30,000	Gale	Cargo of asphalt lost	Do.
Valentine, Nebr.	17-18					Glazestorm	No details	Do.
Sheridan, Wyo.	17-18			2		Snowstorm	Much damage to trees	Do.
Wichita, Kans.	18	10:25 p. m.		1	200	Wind	No other details	Do.
Bismarck, N. Dak.	18-19					Snow, sleet, and rain	Telephone and telegraph communication interrupted; roads in northern and western parts of the State blocked by snow	Do.
Devils Lake, N. Dak.	18-19					Ice storm	Much damage to all wire systems	Do.
Casper, Laramie, Lusk, Riverton, Dubois, Cheyenne, Rock River, and Green River, Wyo.	18, 19, and 21					Glazestorms	Considerable damage to telephone lines	Do.
Meridian, Miss., and vicinity	22	5 p. m.				Heavy thunderstorm	2 persons injured by lightning	Do.
Oklahoma City, Okla.	25	5 a. m.			15,000-20,000	Electrical	10 oil tanks destroyed	Do.
Williamsport to Lock Haven, Pa.	26	P. m.				Strong winds	Damage to wires	Do.
Bayfield Peninsula, Wis., to Calumet, Mich.	28-29	P. m.			22,000	Heavy snow and gale	Highways blocked, auto stalled, electric wires damaged; city dock at Ashland wrecked	Do.
Dallas, Tex.	31	3:50 to 6:00 a. m.				Thundersquall	Damage reported as result of high winds	Do.
Cowarts, Ala.	31	11:30 a. m.	350	1	32,000	Tornado	16 persons injured; property damaged; path 4 miles long	Do.
Grady County, Ga.	31	3:00 p. m.	100		40,000	do.	Electric wires and poles damaged; much property loss; about 30 persons injured, 2 probably fatally	Do.
Gulfport, Miss. (3 miles east of)	31	3:10 p. m.				Thundersquall	Considerable damage to electric wires, buildings, and trees	Do.
Thomasville, Ga.	31	5-8 p. m.				Severe electrical, wind, and rain	No material damage reported	Do.
Fort Smith, Ark.	31				15,000	Electrical	Store building and stock damaged	Do.

¹ Miles instead of yards.

Chart I. Departure (°F.) of the Mean Temperature from the Normal, October, 1932



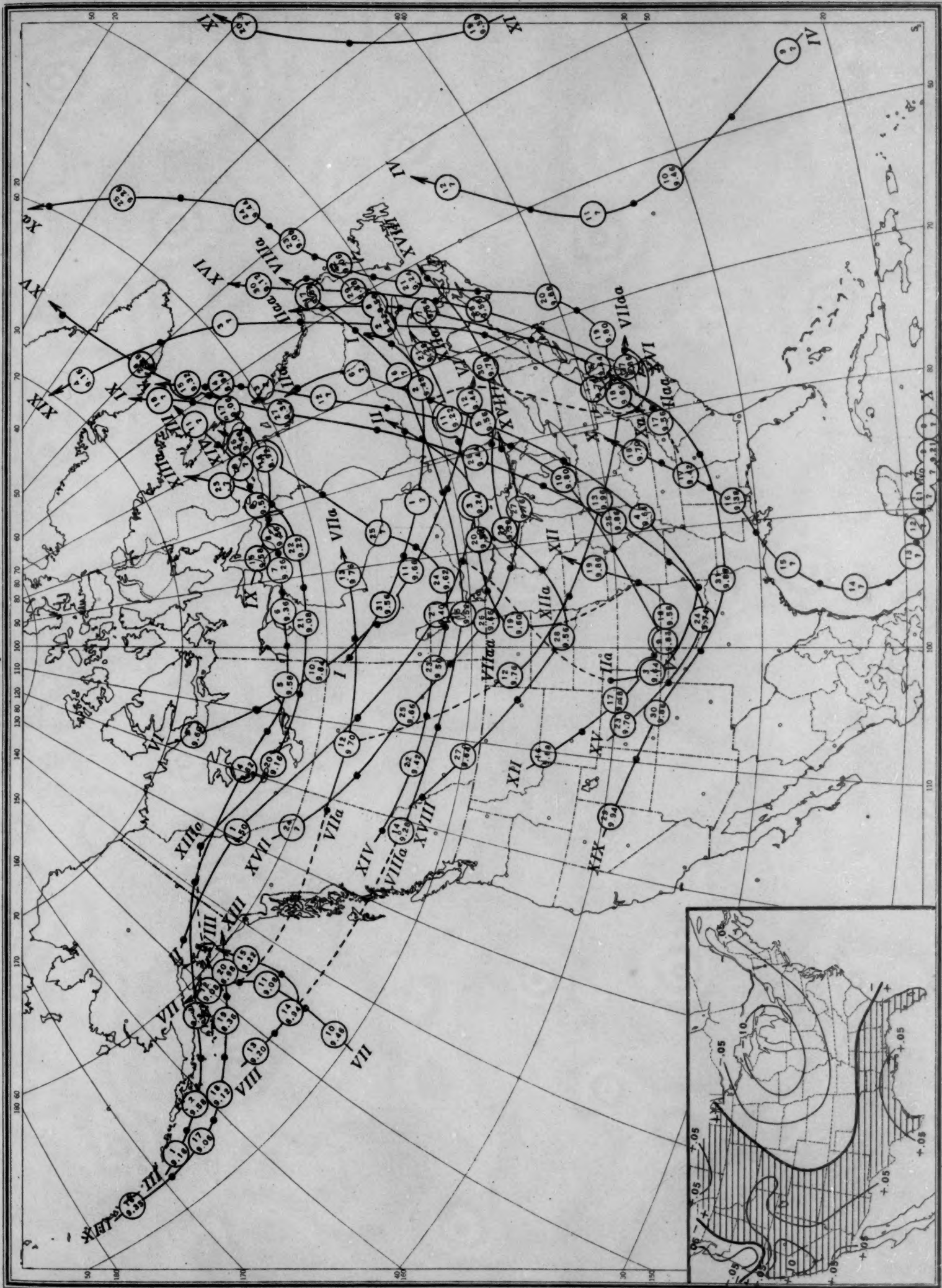
(Plotted by G. E. Dunn)



Circle indicates position of anticyclone at 8 a. m. (75th meridian time), with barometric reading. Dot indicates position of anticyclone at 8 p. m. (75th meridian time).

Chart III. Tracks of Centers of Cyclones, October, 1932. (Inset) Change in Mean Pressure from Preceding Month

(Plotted by G. E. Dunn)



Circle indicates position of cyclone at 8 a. m. (75th meridian time), with barometric reading. Dot indicates position of cyclone at 8 p. m. (75th meridian time).



Chart IV. Percentage of Clear Sky between Sunrise and Sunset, October, 1932

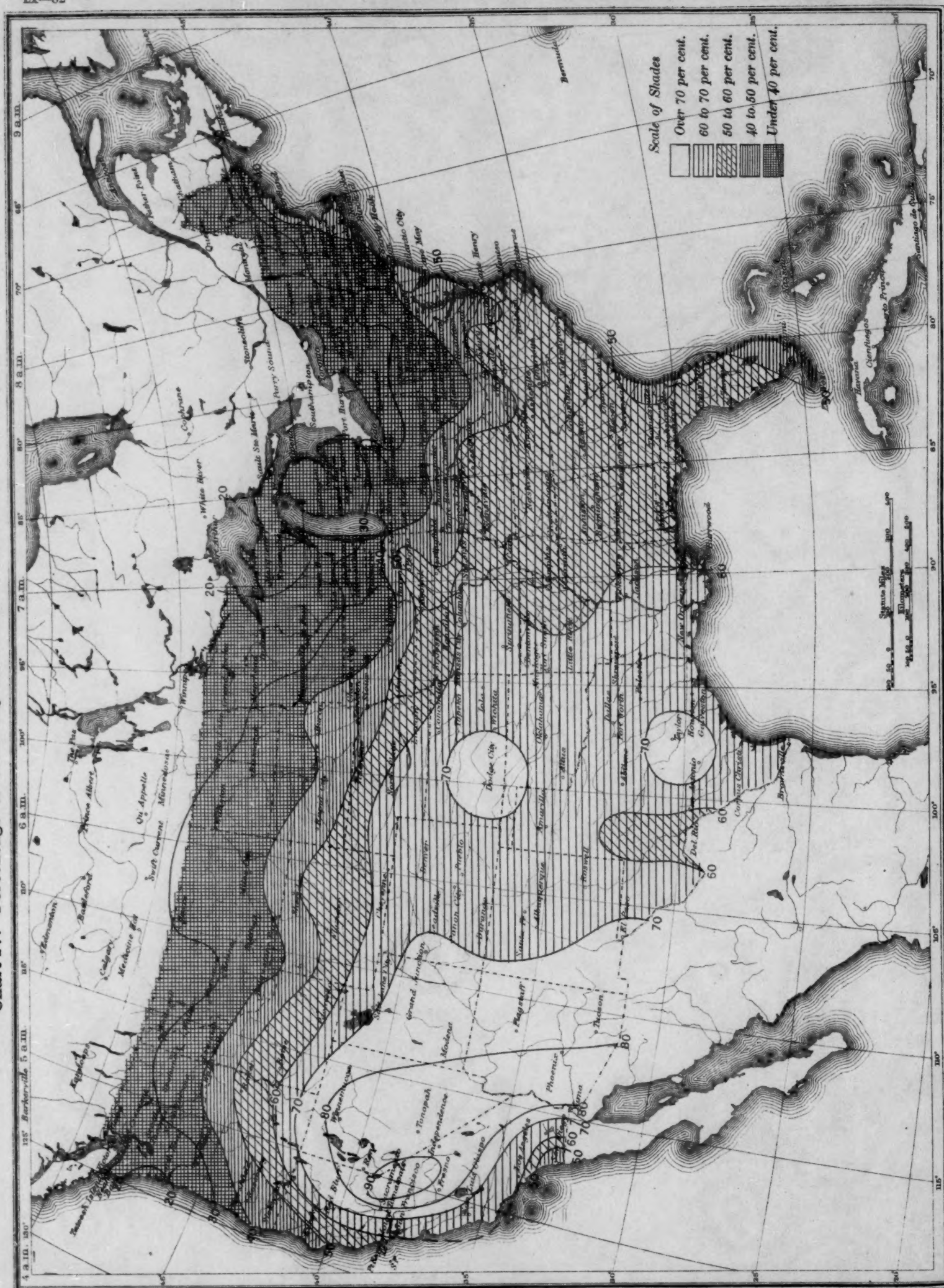


Chart V. Total Precipitation, Inches, October, 1932. (Inset) Departure of Precipitation from Normal

Chart V. Total Precipitation, Inches, October, 1932. (Inset) Departure of Precipitation from Normal

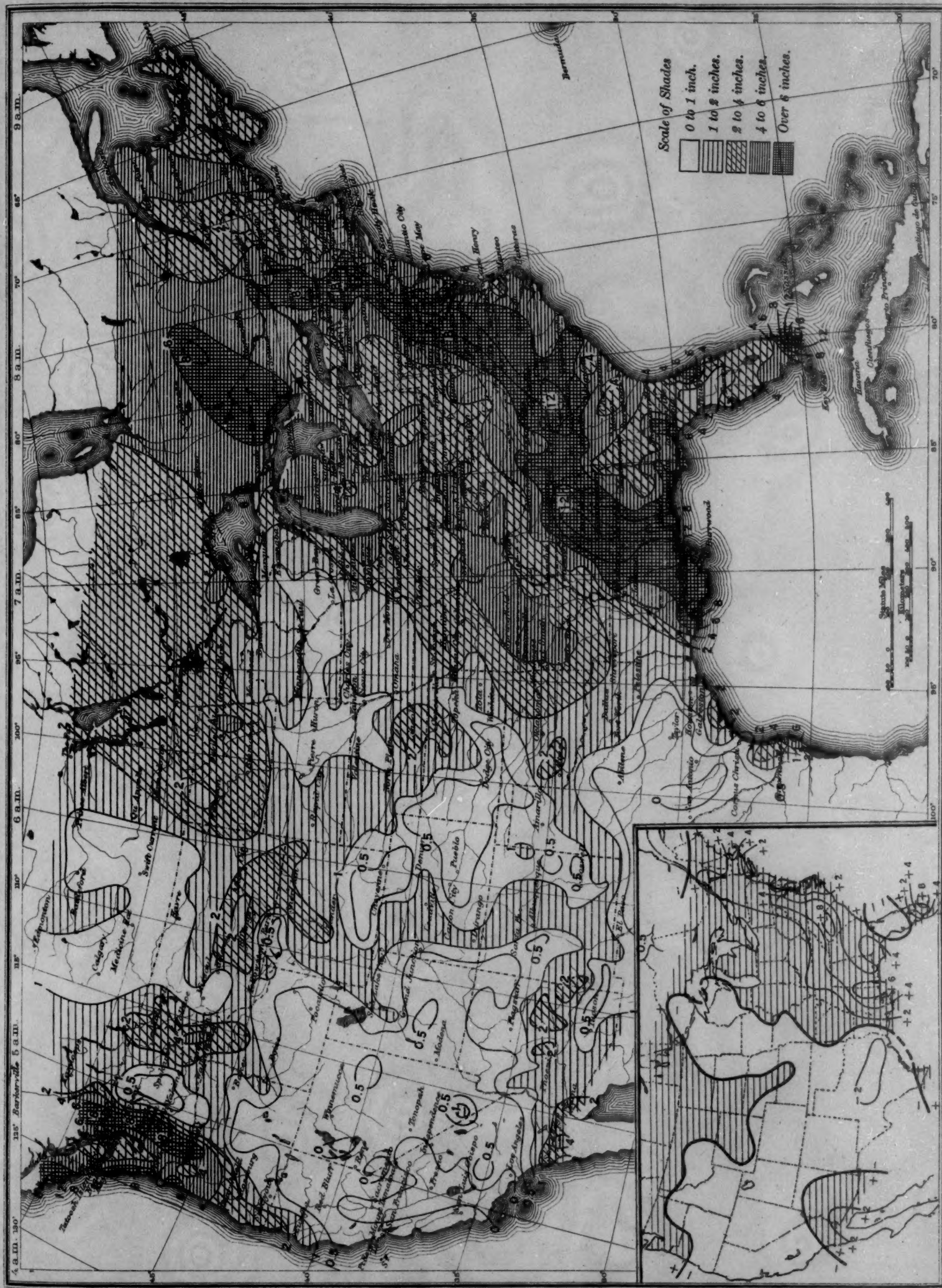


Chart VI. Isobars at Sea level and Isotherms at Surface; Prevailing Winds, October, 1932

